



**PART D**

Opportunities and  
Issues for the UK

# 7. Opportunities and Issues for the UK

## 7.1 Introduction & Current Status

The United Kingdom is in the process of dealing with the legacy from its first generation of civil nuclear power, its Magnox reactors, together with some earlier facilities, including prototype and research reactors and facilities which were wholly or partly associated with the military nuclear programme. Cleaning up the nuclear legacy is a long term process. In the UK it is a programme that will cost around £56bn with a stated annual expenditure of around £2bn over a period of many decades. The UK Government has decided that this clean up programme is best achieved by the establishment of a new public body, the Nuclear Decommissioning Authority (NDA). The NDA is a national body, established by primary legislation, with responsibility for decommissioning and clean up of the UK's historic legacy of public sector nuclear sites. It will have the dedicated skills and capability to oversee the strategic management and direction of legacy clean up.

Although not within the NDA's remit, a further generation of advanced gas cooled reactors (AGR's) and a pressurised-water reactor (PWR) are currently operated in the UK and all of the AGR's will reach the end of their operational lifetime by 2023.

Other areas where nuclear clean up and decommissioning activities are taking place in the UK include military and defence establishments such as AWE at Aldermaston and the nuclear submarine fleet through project ISOLUS.

Twenty three nuclear units are in operation in the United Kingdom, supplying almost 22% of the electricity generated in the country. Table 1 shows the status of the nuclear power plants in the UK. Sizewell B, the last reactor to be constructed, was connected to the grid in February 1995 and achieved full load in September 1995.

Apart from raw uranium mining the UK has an independent nuclear fuel cycle capability. The full range of the nuclear fuel cycle services, from fuel enrichment and manufacture through to spent fuel reprocessing, transport, waste management and decommissioning, are provided at Capenhurst, Springfields and Sellafield.

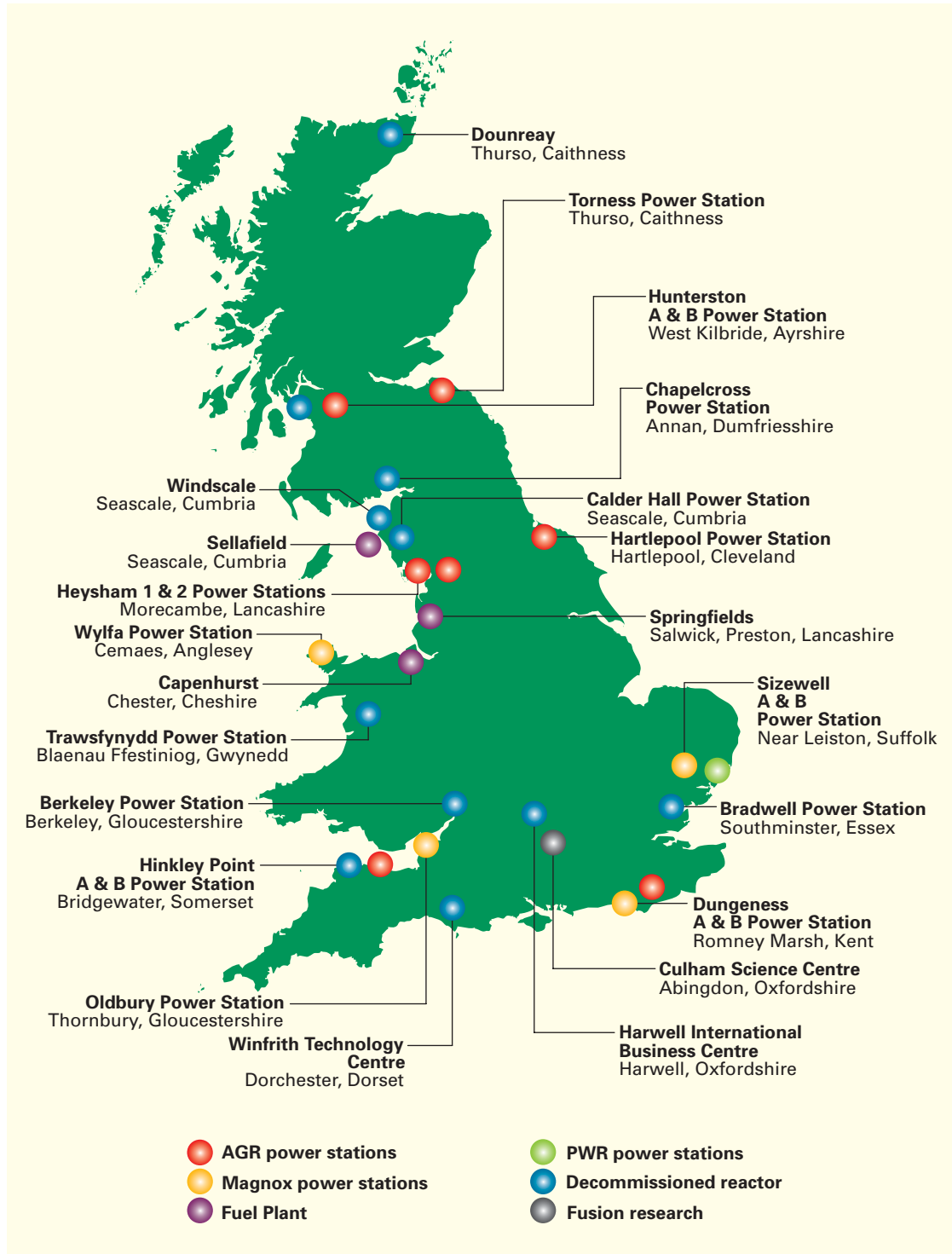
**Table 1: Status of UK Nuclear Power Plants**

Station	Type	Capacity	Operator	Status	Reactor Supplier	Construction Date	Criticality Date	Grid Date	Commercial Date	Shutdown Date
BRADWELL	GCR	123	BNFL	Shut down	TNPG	01-Jan-57	01-Aug-61	01-Jul-62	01-Jul-62	2002
BRADWELL	GCR	123	BNFL	Shut down	TNPG	01-Jan-57	01-Apr-62	06-Jul-62	12-Nov-62	2002
CALDER HALL	GCR	50	BNFL	Shut down	UKAEA	01-Aug-53	01-May-56	27-Aug-56	01-Oct-56	2003
CALDER HALL	GCR	50	BNFL	Shut down	UKAEA	01-Aug-53	01-Dec-56	01-Feb-57	01-Feb-57	2003
CALDER HALL	GCR	50	BNFL	Shut down	UKAEA	01-Aug-55	01-Mar-58	01-Mar-58	01-May-58	2003
CALDER HALL	GCR	50	BNFL	Shut down	UKAEA	01-Aug-55	01-Dec-58	01-Apr-59	01-Apr-59	2003
CHAPELCROSS	GCR	50	BNFL	Shut down	UKAEA	01-Oct-55	01-Nov-58	01-Feb-59	01-Mar-59	2005
CHAPELCROSS	GCR	50	BNFL	Shut down	UKAEA	01-Oct-55	01-May-59	01-Jul-59	01-Aug-59	2005
CHAPELCROSS	GCR	50	BNFL	Shut down	UKAEA	01-Oct-55	01-Aug-59	01-Nov-59	01-Dec-59	2005
CHAPELCROSS	GCR	50	BNFL	Shut down	UKAEA	01-Oct-55	01-Dec-59	01-Jan-60	01-Mar-60	2005
DUNGENESS-A	GCR	225	BNFL	Operational	TNPG	01-Jul-60	01-Jun-65	21-Sep-65	28-Oct-65	2006
DUNGENESS-A	GCR	225	BNFL	Operational	TNPG	01-Jul-60	01-Sep-65	01-Nov-65	30-Dec-65	2006
DUNGENESS-B1 UNIT A	AGR	555	BE	Operational	APC	01-Oct-65	04-Dec-85	29-Dec-85	01-Apr-89	2018
DUNGENESS-B2 UNIT B	AGR	555	BE	Operational	APC	01-Oct-65	23-Dec-82	03-Apr-83	01-Apr-85	2018
HARTLEPOOL-A1 UNIT A	AGR	605	BE	Operational	NPC	01-Oct-68	24-Jun-83	01-Aug-83	01-Apr-89	2014
HARTLEPOOL-A2 UNIT B	AGR	605	BE	Operational	NPC	01-Oct-68	09-Sep-84	31-Oct-84	01-Apr-89	2014
HEYSHAM-1 UNIT A	AGR	575	BE	Operational	NPC	01-Dec-70	06-Apr-83	09-Jul-83	01-Apr-89	2014
HEYSHAM-1 UNIT B	AGR	575	BE	Operational	NPC	01-Dec-70	03-Jun-84	11-Oct-84	01-Apr-89	2014
HEYSHAM-2 UNIT A	AGR	625	BE	Operational	NPC	01-Aug-80	23-Jun-88	12-Jul-88	01-Apr-89	2023
HEYSHAM-2 UNIT B	AGR	625	BE	Operational	NPC	01-Aug-80	01-Nov-88	11-Nov-88	01-Apr-89	2023
HINKLEY POINT-A	GCR	235	BNFL	Shut down	EE/B&W/T	01-Nov-57	01-May-64	16-Feb-65	30-Mar-65	2000
HINKLEY POINT-A	GCR	235	BNFL	Shut down	EE/B&W/T	01-Nov-57	01-Oct-64	19-Mar-65	05-May-65	2000
HINKLEY POINT-B UNIT A	AGR	610	BE	Operational	TNPG	01-Sep-67	24-Sep-76	30-Oct-76	02-Oct-78	2011
HINKLEY POINT-B UNIT B	AGR	610	BE	Operational	TNPG	01-Sep-67	01-Feb-76	05-Feb-76	27-Sep-76	2011
HUNTERSTON-B1 UNIT A	AGR	595	BE	Operational	TNPG	01-Nov-67	31-Jan-76	06-Feb-76	06-Feb-76	2011
HUNTERSTON-B2 UNIT B	AGR	595	BE	Operational	TNPG	01-Nov-67	27-Mar-77	31-Mar-77	31-Mar-77	2011
OLDBURY-A	GCR	217	BNFL	Operational	TNPG	01-May-62	01-Aug-67	07-Nov-67	31-Dec-67	2008
OLDBURY-A	GCR	217	BNFL	Operational	TNPG	01-May-62	01-Dec-67	06-Apr-68	30-Sep-68	2008
SIZEWELL-A	GCR	210	BNFL	Operational	EE/B&W/T	01-Apr-61	01-Jun-65	21-Jan-66	25-Mar-66	2006
SIZEWELL-A	GCR	210	BNFL	Operational	EE/B&W/T	01-Apr-61	01-Dec-65	09-Apr-66	15-Sep-66	2006
SIZEWELL-B	PWR	1188	BE	Operational	PPC	18-Jul-88	31-Jan-95	14-Feb-95	22-Sep-95	2035
TORNESS UNIT A	AGR	625	BE	Operational	NNC	01-Aug-80	25-Mar-88	25-May-88	25-May-88	2023
TORNESS UNIT B	AGR	625	BE	Operational	NNC	01-Aug-80	23-Dec-88	03-Feb-89	03-Feb-89	2023
WYLFA	GCR	490	BNFL	Operational	EE/B&W/T	01-Sep-63	01-Nov-69	24-Jan-71	01-Nov-71	2010
WYLFA	GCR	490	BNFL	Operational	EE/B&W/T	01-Sep-63	01-Sep-70	21-Jul-71	03-Jan-72	2010
BERKELEY	GCR	138	BNFL	Shut Down	TNPG	01-Jan-57	01-Aug-61	12-Jun-62	12-Jun-62	31-Mar-89
BERKELEY	GCR	138	BNFL	Shut Down	TNPG	01-Jan-57	01-Mar-62	24-Jun-62	20-Oct-62	26-Oct-88
DOUNREAY FR	FBR	14	UKAEA	Shut Down	UKAEA	01-Mar-55	14-Nov-59	01-Oct-62	01-Oct-62	01-Mar-77
HUNTERSTON-A1	GCR	150	BNFL	Shut Down	GEC	01-Oct-57	01-Aug-63	05-Feb-64	05-Feb-64	30-Mar-90
HUNTERSTON-A2	GCR	150	BNFL	Shut Down	GEC	01-Oct-57	01-Mar-64	01-Jun-64	01-Jul-64	31-Dec-89
PFR DOUNREAY	FBR	234	UKAEA	Shut Down	TNPG	01-Jan-66	01-Mar-74	10-Jan-75	01-Jul-76	31-Mar-94
TRAWSFYNYDD	GCR	195	BNFL	Shut Down	APC	01-Jul-59	01-Sep-64	14-Jan-65	24-Mar-65	06-Feb-91
TRAWSFYNYDD	GCR	195	BNFL	Shut Down	APC	01-Jul-59	01-Dec-64	02-Feb-65	24-Mar-65	04-Feb-91
WINDSCALE AGR	AGR	32	UKAEA	Shut Down	VARIOUS	01-Nov-58	09-Aug-62	01-Feb-63	01-Mar-63	03-Apr-81
WINFRITH SGHWR	SGHWR	92	UKAEA	Shut Down	ICL/FE	01-May-63	01-Sep-67	01-Dec-67	01-Jan-68	11-Sep-90

## 7.2 Location of UK Nuclear Licensed Sites

The map provided below as fig 1 shows the location of all the nuclear licensed sites in the UK.

Fig 2.1: Map of the UK Nuclear Licensed Sites



## 7.3 Nuclear Sector, Customers & Stakeholders

### **Nuclear Decommissioning Authority (NDA)**

The NDA was launched on April 1st 2005 and has strategic responsibility for the decommissioning and clean up of all 20 of the UK public sector civil sites. The NDA was set up by the Government under the Energy Act 2004 and from 1st April the NDA became responsible for the nuclear facilities currently managed by British Nuclear Group which is part of British Nuclear Fuels (BNFL) plc and the United Kingdom Atomic Energy Authority (UKAEA).

The NDA does not carry out the decommissioning work itself but has contracted out the work initially to British Nuclear Group and UKAEA. These contracts will be subject to fair and open tender from suitably qualified organisations in the future.

The decommissioning work, at all of the sites, is carried out by the site licensees in accordance with the annual work plans and five year strategies developed by the NDA. The Authority will be responsible for paying the contractors for the work and ensuring the taxpayer is receiving value for money. An incentive scheme will be in place to reward the contractors for achieving set targets and goals on time.

The NDA will work with site contractors to promote best practice and share experience and knowledge on the decommissioning process and fund scientific research when necessary.

The NDA's headquarters are based in West Cumbria with staffing levels that will ultimately reach about 250. There are also four regional offices. Full contact details of these offices and the NDA Annual Plan are provided on the NDA web site [www.nda.gov.uk](http://www.nda.gov.uk)

The NDA is owner of the 20 civil nuclear sites in the UK which includes:-

- 39 reactors (gas, water and liquid metal cooled)
- 5 fuel reprocessing plants
- 3 fuel fabrication plants
- 1 enrichment plant
- 5 nuclear laboratory complexes

The NDA sites are:-

England	Scotland & Wales
Berkeley & Oldbury (Gloucestershire)	Dounreay (Caithness)
Hinkley Point A (Somerset)	Hunterston A (Ayrshire)
Springfields (Lancashire)	Chapelcross ( Dumfries & Galloway)
Bradwell (Essex)	
Dungeness (Kent)	Trawsfynydd & Wylfa (Gwynedd)
Winfrith (Dorset)	
Harwell & Culham (Oxfordshire)	
Capenhurst (Cheshire)	
Sellafield, Calder Hall, Windscale & Drigg (Cumbria)	
Sizewell A (Suffolk)	

Full details of these sites and their locations are provided on the NDA web site above (click “about the NDA” on the homepage, then “locations”).

Much essential information about the NDA and its sites can be accessed via the NDA web site home page:-

- Details of initial contracts and Parent Company Agreements
- Tender notices
- Annual Plan
- Near Term Work Plans (NTWP’s) and Lifecycle Base Lines (LCBL’s) for all its sites
- Information on the supply chain
- Opportunities available
- A documentation section containing contracts, engineering, memoranda of understanding, NTWP’s, programme controls, information for suppliers and stakeholders.

Note that the LCBL’s are long range plans and specify the scope, schedule and cost of all work to be carried out at the site over its lifetime. The NTWP’s are a subset of the LCBL’s presenting more detailed scope, schedule and cost information for the first 3 years.

## Government

The Department of Trade & Industry (DTI) has the policy responsibility for decommissioning and for nuclear site security.

The Department for Environment, Food and Rural Affairs (DEFRA) has policy responsibility for radioactive waste management.

The Department for Transport (DfT) has responsibility for the regulation of radioactive materials transport.

The Ministry of Defence (MOD) has the policy responsibility for decommissioning the nuclear submarine fleet.

The Regional Development Agencies (RDA's), whose primary role is a strategic drivers of economic development.

Other Government Departments, UK Trade & Investment (UKTI) and Scottish Development International (SDI) assist in assessing skills and capability available to UK industry that may be used to promote industry throughout the world.

Full details of the roles of the relative organisations above are provided on their web sites included in section 7.6 of this report, "Information Sources".

## Regulators

Licensing and nuclear and waste management aspects of the Nuclear Installations Act are regulated by HSE/NII. The HSE is also the competent authority for the Nuclear Reactors (Environmental Impact Assessment of Decommissioning) Regulations 1999.

The environment agencies (i.e. the Environment Agency in England and Wales, the Scottish Environment Protection Agency in Scotland) regulate the disposals, under the Radioactive Substances Act (RSA93), of all forms of radioactive wastes (solids, liquids, and gases) from nuclear licensed sites. Prior authorisation must be obtained for the disposal of radioactive waste. An applicant for authorisation must provide a detailed consideration of environmental impacts of disposals. Authorisations issued by the Agency place numerical limits on the quantities of radioactive waste, which can be disposed. They also require that "best practicable means" are used to minimise the quantities of waste disposed of, and to minimise the radiological effects of disposals on members of the public and the environment.

HSE/NII and the environment agencies work closely together. Their responsibilities and working arrangements on matters of joint interest are described within a "Memorandum of Understanding." Amongst other things, this has facilitated co-operation during HSE/NII's quinquennial review of operators' decommissioning strategies.

The office of Civil Nuclear Security sets the standards for and regulates the security of sites.

Guidance on the constraints and regulations in the nuclear sector together with applicable quality standards is provided in section 7.7 of this Annexe, "Guidance on constraints and regulations in the nuclear sector"

## **Nirex & CoRWM**

Nirex is based at Harwell in Oxfordshire with a team of 67 staff working on a wide range of projects in many different disciplines.

On 1 April 2005 Nirex was made independent of the nuclear industry, in a move to boost transparency and accountability in the long-term management of radioactive waste.

Nirex conducts research on options for dealing with radioactive waste, sets specifications and standards and advise the industry on how to treat and package radioactive waste through the application of the Nirex Letter of Compliance Process. It also maintains an inventory of radioactive waste in the UK in conjunction with Defra and communicates with stakeholders including the public to address concerns surrounding radioactive waste management. Their work is carried out in accordance with Government policy ensuring no conflict or overlap with the work of CoRWM or the NDA.

In March 1997 the Secretary of State for the Environment decided not to give UK Nirex Ltd planning permission for an underground rock laboratory near Sellafield. Such a laboratory might have led in due course to a proposal for a deep geological repository for ILW and some long-lived LLW at the site. This decision has inevitably led to a review of the future direction of radioactive waste management policy in the UK.

The UK Government and the devolved administrations for Scotland and Wales are currently considering the options for a UK policy for all forms of radioactive wastes. In September 2001 the UK government published a consultation paper, 'Managing Radioactive Waste Safely – Proposals for developing a policy for managing solid radioactive waste in the UK'. A period of public consultation followed until March 2002. In July 2002 the government announced that, following these consultations, it intended to set up a new body, the Committee on Radioactive Waste Management (CoRWM). This has the brief of assessing the options for managing solid radioactive waste and recommending to UK ministers the best solution that will achieve long-term protection for people and the environment. It is expected that this should reach a conclusion in 2006.

## **Main Site Operators/Licensees**

Currently the main operators/licensees of the major civil nuclear sites in the UK are UKAEA, British Nuclear Group (owned by BNFL) and British Energy.

The initial contracts between the NDA and the Site Licensee Companies (British Nuclear Group Sellafield Ltd, Magnox Electric Ltd, and Springfields Fuels Ltd), the Parent Company Agreements with British Nuclear Group and Westinghouse UK, and the United Kingdom Atomic Energy Authority have been published on the NDA web site.

Other organisations with relevant nuclear site management experience, albeit not directly in the civilian clean up environment include Amersham, Rolls Royce, DML and AWE.

## **Funding Arrangements**

The nuclear legacy sites are owned directly or indirectly by the UK Government. The NDA will be funded directly by the UK Government. The Energy Bill contained provisions to establish a Statutory Segregated Account, known as the Nuclear Decommissioning Funding Account (NDFA), to fund the NDA's clean up activities. In the case of privatised nuclear power stations, segregated funds have been established by the licensee for meeting their costs of decommissioning and associated waste management.

## 7.4 UK Nuclear Sites – Decommissioning Status & Programmes

The current decommissioning status of all the UK civil nuclear sites is recorded on the WNA web site at:-

[www.world-nuclear.org/wgs/decom/database/database.htm](http://www.world-nuclear.org/wgs/decom/database/database.htm)

Carry out a search on Country (all types of facility) for the UK. Calder Hall (four Magnox Reactors) should be added to the list of shut down reactors.

For British Nuclear Group Sites full details of the following can be found on their web site at:- [www.britishnucleargroup.com](http://www.britishnucleargroup.com)

Their home page contains a menu providing details of the company, its structure and capabilities together with its locations and information for suppliers.

Click on “suppliers” and find information on the way British Nuclear Group do business, commercial opportunities, expressing an interest (how opportunities are advertised, responding to an advertisement, how to express an interest, and their assessment process). Also in this section under “Management Services at Sellafield”, details of the Near Term Work Plans, Procurement Plan, commodity groups, contract opportunities, awarded contracts and importantly a contacts list can be found.

Click on “Our Locations” and find the location of all British Nuclear Group sites including the reactor sites. Select a site from the menu, click on “find more” and information is provided on the site, communications, what happens at site and scope of work, details of the NTWP’s and site contact details.

For UKAEA sites full details of the following can be found on their web site at:- [www.ukaea.org.uk](http://www.ukaea.org.uk)

The home page contains a menu providing details about UKAEA, its structure, processes and its sites together with information on decommissioning and opportunities for contractors.

Click on “About UKAEA”, then from the menu “UKAEA Sites” to find all its site locations.

Click on a site to find details of the site, its LCBL, NTWP and Site Restoration Plan in the case of Dounreay together with information on decommissioning projects.

Click on “Decommissioning” to find the current status of decommissioning and future plans with links to LCBL’s and NTWP’s for all of the UKAEA sites.

Click on “Contractors” to find information on contract opportunities and how to express interest and the procurement strategy. Note the “contact information” which provides full details of the contract team and financial and commercial division.

Note also the link on the home page to “contract opportunities” which includes contract opportunities, status updates and contracts placed together with announcements for contractors.

Although not part of the civil nuclear programme there are decommissioning opportunities at AWE Aldermaston and the Burghfield sites. Information about AWE can be found on its web site at:- [www.awe.co.uk](http://www.awe.co.uk)

The home page contains a menu, access to which provides details of the company and contacts.

Click on “business” then “procurement” to find links to site details, their contracts bulletin, procurement of goods and services and relationship with suppliers.

AWE has an Environmental Programmes Group which undertakes legacy work through a Legacy Programme which extends over 70 years with a total cost of about £2.5 billion. It has environmental programme 10 year management plan that includes:-

- Decommissioning – removal of redundant facilities in a phased manner
- Waste Management Operations – disposal of wastes, safe long term storage of wastes, wastes minimisation and aqueous discharge control.
- Environmental projects – Investigation of land and groundwater conditions, remediation of contaminated land and implementation of environmental improvement projects
- £30million per year on legacy programmes
- 350 staff and contractors delivering projects

The MOD has requested proposals from industry regarding the safe disposal of decommissioned nuclear powered submarines. Over the next 30 years up to 27 submarines will be taken out of service. The 11 laid up submarines at Rosyth and Devonport are de-fuelled and future decommissioned submarines will be de-fuelled at Devonport prior to entering the Interim Storage of Laid up Submarines (ISOLUS) programme. The project is on hold pending the outcome of the CoRWM review of long term storage of nuclear waste in the UK.

Information on this and access to the MOD procurement portal can be found at:- [www.mod.uk/](http://www.mod.uk/)

## 7.5 UK Contracting Companies in the Nuclear Sector

The NDA Contracting Model is provided on the NDA web site in the Suppliers area.

A recent NIA Study has indicated that the supply chain in the UK will consist of three main tiers. Organisations at tier 1 will deliver against contracts awarded by the NDA and will earn fees from delivering agreed NTWP's. Current tier 1 organisations for the NDA sites are the existing site licensees who hold the M & O contracts for their sites. This situation will change in the future as it is an NDA target to compete at least half the sites by the end of 2008. The supply chain model shows a larger number of tier 1 companies competing for contracts to manage and operate sites and dealing with a reduced number of tier 2 companies which in turn will manage companies lower down the supply chain at tier 3 and below.

All of the major contractors in the UK nuclear supply chain are members of the Nuclear Industry Association (NIA) and for NIA member's links to all of these company web sites can be found on the NIA web site member's home page at [www.niauk.org/members](http://www.niauk.org/members)

Further details of nuclear industry suppliers can be found on the web sites of the main UK site licensees who publish details of companies who have been awarded contracts for supply of goods and services.

The Foratom web site has a list of 63 UK Companies working in the UK nuclear industry, many with links to their company web sites providing details of their products/services together with contact information.

See:- [www.foratom.org](http://www.foratom.org)

Click on "links" on the homepage, then "companies" and scroll down to UK.

## 7.6 Other Information

### 7.6.1 Sources of Information

#### *Books*

Nuclear Decommissioning, Waste Management and Environment Site Remediation

Colin Bayliss & Kevin Langley

ISBN 0-7506-7744-9

Butterworth-Heinemann, 2003

#### *Reports published via the Internet*

The Decommissioning and Dismantling of Nuclear Facilities Status, Approaches, Challenges

Nuclear Energy Agency, 2002

[www.nea.fr/html/rwm/reports/2002/3714-decommissioning.pdf](http://www.nea.fr/html/rwm/reports/2002/3714-decommissioning.pdf)

Decommissioning of Nuclear Power Facilities

Nuclear Energy Agency, 2004

[www.nea.fr/html/rwm/reports/2004/nea5728-decom.pdf](http://www.nea.fr/html/rwm/reports/2004/nea5728-decom.pdf)

The above report provides references to further relevant publications on decommissioning and related websites.

IAEA-TECDOC-1043 – Technologies for gas cooled reactor decommissioning, fuel storage and waste disposal.

Proceedings of a Technical Committee meeting held in Julich, Germany, 1997

[www.iaea.or.at/inis/aws/htgr/fulltext/29059898.pdf](http://www.iaea.or.at/inis/aws/htgr/fulltext/29059898.pdf)

Decommissioning of Nuclear Power Plants

Nuclear Energy Institute

[www.nei.org/doc.asp?catnum=3&catid=278](http://www.nei.org/doc.asp?catnum=3&catid=278)

Decommissioning Nuclear Facilities

Report by the Australian Uranium Information Centre

[www.uic.com.au/nip13.htm](http://www.uic.com.au/nip13.htm)

The Government's 2002 white paper 'Managing the Nuclear Legacy' is available at

[www.dti.gov.uk/nuclearcleanup/ach/whitepaper.pdf](http://www.dti.gov.uk/nuclearcleanup/ach/whitepaper.pdf)

The Energy Act 2004 itself, can be found at

[www.legislation.hmso.gov.uk/acts/acts2004/20040020.htm](http://www.legislation.hmso.gov.uk/acts/acts2004/20040020.htm)

## ***Conferences***

Recent nuclear conference and seminars in the UK have tended to focus on nuclear decommissioning or waste management. Proceedings are generally available from the event.

Organisers of such events include the NIA, BNES, Institution of Nuclear Engineers and commercial conference organisers such as IBC & IQPC.

## ***UK Government websites***

Information about the NDA, its purpose, structure and resources with details of forthcoming events for suppliers can be found at:

**[www.nda.gov.uk](http://www.nda.gov.uk)**

An important website that explains the current and forthcoming changes in the nuclear clean up arrangements is:

**[www.dti.gov.uk/nuclearcleanup](http://www.dti.gov.uk/nuclearcleanup)**

General information on the nuclear sector may be found at:

**[www.dti.gov.uk/energy/nuclear/index.shtml](http://www.dti.gov.uk/energy/nuclear/index.shtml)**

Information regarding the management of radioactive waste, an important issue, which is closely related to nuclear decommissioning, can be found at:

**[www.defra.gov.uk/environment/radioactivity/waste/index.htm](http://www.defra.gov.uk/environment/radioactivity/waste/index.htm)**

Information concerning the transport of nuclear materials and waste can be found at:

**[www.dft.gov.uk](http://www.dft.gov.uk)** (word search home page use "nuclear")

## ***EU websites***

The following are two directly relevant pages from the official European Commission's website:

General

**[europa.eu.int/cmm/energy/nuclear/decommissioning/index\\_en.htm](http://europa.eu.int/cmm/energy/nuclear/decommissioning/index_en.htm)**

Candidates for EU membership

**[europa.eu.int/comm/energy/nuclear/decommissioning/candidate\\_en.htm](http://europa.eu.int/comm/energy/nuclear/decommissioning/candidate_en.htm)**

## ***Nuclear Industry Association (NIA) & other trade associations***

The NIA represents over 115 companies operating in the whole of the UK nuclear industry. As it represents the licensees and the contractors, there is a wealth of on information on this site or linked to it.

**[www.niauk.org](http://www.niauk.org)**

East of England Energy Group  
[www.eeegr.com/index.php](http://www.eeegr.com/index.php)

UK Trade and Investment  
[www.uktradeinvest.gov.uk/ukti/appmanager/ukti/splash](http://www.uktradeinvest.gov.uk/ukti/appmanager/ukti/splash)

Scottish Development International  
[www.scottishdevelopmentinternational.com/pages/index.asp](http://www.scottishdevelopmentinternational.com/pages/index.asp)

***Licensees coming under the new NDA arrangements***

United Kingdom Atomic Energy Authority  
[www.ukaea.org.uk/](http://www.ukaea.org.uk/)

British Nuclear Group  
[www.britishnucleargroup.com/](http://www.britishnucleargroup.com/)

In addition, BNFL ([www.bnfl.com](http://www.bnfl.com)) has recently created a new site for Sellafield on which they have published components of the Near Term Work Plan.  
[www.sellafield.com](http://www.sellafield.com)

***Main licensees currently outside of the new NDA arrangements***

British Energy  
[www.british-energy.com/](http://www.british-energy.com/)

DML  
[www.devonport.co.uk/](http://www.devonport.co.uk/)

AWE  
[www.awe.co.uk/](http://www.awe.co.uk/)

Urenco  
[www.urengo.com/](http://www.urengo.com/)

BAe Systems Marine  
[www.baesystems.com/](http://www.baesystems.com/)

Rolls-Royce  
[www.rolls-royce.com/marine/default.jsp](http://www.rolls-royce.com/marine/default.jsp)

Radiological protection (Classified Workers requirements)  
The National Radiological Protection Board  
[www.nrpb.org/](http://www.nrpb.org/)

### ***Learned bodies***

The British Nuclear Energy Society  
**[www.bnes.com/frames.htm](http://www.bnes.com/frames.htm)**

The Institution of Nuclear Engineers  
**[www.inuce.org.uk/](http://www.inuce.org.uk/)**  
(Hosted by the BNES)

Most other engineering institutions can be accessed through the BNES site.

### ***International bodies***

Foratom (European Atomic Forum)  
**[www.foratom.org](http://www.foratom.org)**

The International Atomic Energy Agency  
**[www.iaea.org](http://www.iaea.org)**

Nuclear Energy Agency – also known as the Agence pour l'énergie nucléaire (AEN)  
Funded by the OECD and supported by the DTI.  
**[www.nea.fr](http://www.nea.fr)**

World Association of Nuclear Operators  
**[www.wano.org.uk/](http://www.wano.org.uk/)**

The World Nuclear Association  
**[www.world-nuclear.org/](http://www.world-nuclear.org/)**

See Chapter 10 on international opportunities for a description of the WNA's decommissioning database

The World Nuclear Transport Institute  
**[www.wnti.co.uk/](http://www.wnti.co.uk/)**

Radwaste.org  
Primary purpose of this site is to provide a reference source for radioactive waste management professionals  
**[www.radwaste.org/decom.htm](http://www.radwaste.org/decom.htm)**

World Energy Council  
**[www.worldenergy.org/wec-geis/default.htm](http://www.worldenergy.org/wec-geis/default.htm)**

### ***Development agencies and enterprise organisations***

North West Development Agency  
**[www.nwda.co.uk/](http://www.nwda.co.uk/)**

South East Development Agency

[www.seeda.co.uk/](http://www.seeda.co.uk/)

East of England Development Agency

[www.eeda.org.uk](http://www.eeda.org.uk)

One North East Development Agency

[www.onenortheast.co.uk/page/index.cfm](http://www.onenortheast.co.uk/page/index.cfm)

West Midlands Development Agency

[www.advantagewm.co.uk/](http://www.advantagewm.co.uk/)

East Midlands Development Agency

[www.emda.org.uk/main/](http://www.emda.org.uk/main/)

Welsh Development Agency

[www.wda.co.uk/index.cfm/wdahome/index/en2](http://www.wda.co.uk/index.cfm/wdahome/index/en2)

Scottish Enterprise

[www.scottish-enterprise.com/energy](http://www.scottish-enterprise.com/energy)

Highland and Islands Enterprise

[www.hie.co.uk/](http://www.hie.co.uk/)

### ***Skills initiatives***

Cogent

[www.cogent-ssc.com/index.php](http://www.cogent-ssc.com/index.php)

The Engineering Construction Industry Training Board (EICTB) is working closely with Cogent for both the nuclear and offshore oil & gas sectors

[www.ecitb.org.uk/](http://www.ecitb.org.uk/)

### ***Regulators***

The Nuclear Safety Directorate of the HSE including the Nuclear Installations Inspectorate

[www.hse.gov.uk/nsd/index.htm](http://www.hse.gov.uk/nsd/index.htm)

The Environment Agency (covering England & Wales)

[www.environment-agency.gov.uk/](http://www.environment-agency.gov.uk/)

Scottish Environment Protection Agency

[www.sepa.org.uk/radioactivity/index.htm](http://www.sepa.org.uk/radioactivity/index.htm)

The UK government's formal submission to the IAEA Convention on Nuclear Safety describes the relationships between the various regulators, and is available at

**[www.hse.gov.uk/nsd/cns2.pdf](http://www.hse.gov.uk/nsd/cns2.pdf)**

Also, see the IAEA links given under International bodies.

### ***Other national sources of information***

The Nuclear Energy Institute (USA)

**[www.nei.org/](http://www.nei.org/)**

Australian Uranium Information Centre

**[www.uic.com.au/](http://www.uic.com.au/)**

### ***Miscellaneous sources***

The Virtual Tourist

**[www.nucleartourist.com/](http://www.nucleartourist.com/)**

International Nuclear Safety Centre

**[www.insc.anl.gov/](http://www.insc.anl.gov/)**

(UK) Supporters of Nuclear Energy

**[www.sone.org.uk/](http://www.sone.org.uk/)**

### ***Nirex***

An organisation set up by the nuclear industry, with the agreement of the Government, to examine safe, environmental and economic aspects of deep geological disposal of intermediate-level radioactive waste and some low-level wastes. The Government has now announced how Nirex is to be made independent of the nuclear industry.

**[www.nirex.co.uk/](http://www.nirex.co.uk/)**

### ***CoRWM – Committee on Radioactive Waste Management***

UK Government appointed independent committee consulting and recommending a long-term solution on how higher level wastes should be managed in the long-term.

**[www.corwm.org.uk/content-0](http://www.corwm.org.uk/content-0)**

### ***COMARE***

COMARE is an independent expert advisory committee that offers independent advice to all Government Departments and Devolved Authorities and is responsible for assessing and advising them on the health effects of natural and man-made radiation in the environment.

**[www.comare.org.uk/](http://www.comare.org.uk/)**

## **NuSAC**

A committee to advise the Health and Safety Commission and when appropriate, Secretaries of State, on major issues affecting the safety of nuclear installations including design, siting, operation, maintenance and decommissioning which are referred to it or which it considers require attention. Also advises the Health and Safety Commission on the adequacy and balance of its nuclear safety research programme.

[www.hse.gov.uk/aboutus/hsc/iacs/nusac/](http://www.hse.gov.uk/aboutus/hsc/iacs/nusac/)

## **7.7 Guidance on the Constraints and Regulations of the Nuclear Sector**

This appendix provides an insight into the regulations and constraints that a Site Licence Company (licensee) for a nuclear licensed site in the United Kingdom has to work within with examples of the implications for tier 2/3 Suppliers of goods and services.

**A. Site licence requirements and ionising radiation regulations** – Under UK law (the Health and Safety at Work etc. Act 1974) employers are responsible for ensuring the safety of their workers and the public, and this is the same for a nuclear site. This responsibility is reinforced for nuclear installations by the Nuclear Installations Act 1965, as amended. Under the relevant statutory provisions of the act, a site cannot have a nuclear plant on it unless the user has been granted a site licence by the Health and Safety Executive.

The Nuclear Installations Inspectorate (NII) of the HSE administers this licensing function. The legal regime is complemented by the Ionising Radiations Regulations 1999, which provide for protection of workers in all industries from ionising radiations, and by the generality of Health and Safety Regulation, which the NII also enforces on nuclear sites.

The NII sets out, in conditions attached to a site licence, the general safety requirements to deal with the risks on a nuclear site. There are currently 36 conditions associated with the nuclear site licence. Licence conditions define areas of nuclear safety to which a licensee should pay attention to ensure safe operation of the site. While some conditions impose specific duties, others require the licensee to devise and implement adequate arrangements in particular areas. The issues covered range from arrangements for ensuring the safety of plant and for controlling operations, to management issues such as the supervision and training of staff. Breach of a licence condition is an offence. The NII seeks to maintain and improve safety standards for work with ionising radiations at licensed nuclear installations. It does so through its licensing powers by assessing safety cases and inspecting sites for licence

compliance. It sets national regulatory standards and helps to develop international nuclear safety standards. The requirements of Nuclear Site Licensees are set down in Notes for Applicants (available from HSE Books: ISBN-0-7176-0795-X).

## A.1. Implications

- ***Suitably Qualified and Experienced Persons (SQEP)*** – The licensee is required to have staff who are SQEP, primarily for activities affecting nuclear safety. When subcontracting work through the supply chain, licensees may need to assure themselves that the suppliers are also using are suitably qualified and experienced. To help manage the quality of the work being delivered, the licensee will want to know the competencies of the supplier's staff and will generally require a record of how the competency has been assessed, and will be maintained. This means that even for fixed price jobs the licensee will demand that named individuals are used to deliver the work.
- ***Classified workers*** – The Ionising Radiation Regulations recommend that staff working in the nuclear sector that may be subjected to radiation of greater than 6mSv (milli-Sieverts) per annum should be designated as 'Classified Workers'.

In general, this means that staff should have a medical to ensure they are fit for this exposure and are issued with a dosimeter, which is processed at monthly or quarterly intervals to check for actual radiation dose uptake. The more costly issue for the employer is that the company needs to appoint, and train, a Radiation Protection Supervisor (RPS), and a deputy RPS supported by an external Radiation Protection Adviser. For all activities on a licensed nuclear site, the RPS needs to assess the risk associated with working a particular project, and assure the licensee that they are taking their responsibilities seriously in line with local rules and applicable legislation. However, the licensees mitigate some of the impact of the above by hosting contractors into controlled areas during tender visits and for projects with only a few site controlled area visits required.

- ***Working in radiation/contamination areas*** – Decommissioning work may be carried out in areas where special controls are introduced due to the nature of the radiological hazards contained within the area. These controls can range from the time that workers are allowed in such areas to the type of personal protective equipment that has to be worn. Working could involve wearing clean condition clothing or wearing air suits and in all cases will require crossing change barriers and possibly showering on exit. These controls can introduce a significant increase in the time it takes to carry out work.

- **Enhanced safety culture** – Nuclear sites take site safety very seriously. Apart from wishing to minimise the risk of any domino effect that could be triggered from a minor accident, all nuclear site accidents tend to be reported by the media as nuclear accidents and the licensee’s Public Relations personnel have difficulty in convincing the public that the incident is unconnected with any nuclear hazard. For this reason, all contractors are assessed and continuously monitored for their general safety culture.

As for all large industrial sites, contractor’s staff will be required to take part in site safety induction courses (see Security below). Various levels of these courses exist, with some also covering specialist training for access to controlled areas. Some sites require contractors to have the Engineering Construction Industry Training Board (ECITB) Passport.

## B. Quality assurance

Licence Condition 17 of the Site Licence requires the licensee to make and implement adequate quality assurance arrangements in respect of all matters, which may affect safety. The purpose of this is to ensure that the licensee applies quality assurance to all activities associated with the design, construction, manufacture, commissioning, operation, and decommissioning of the installations on the site. The preparation and review of safety documentation must also be included.

Many licensees in the United Kingdom use the International Atomic Energy Agency (IAEA) Code 50-C-Q (Quality Assurance for Safety in Nuclear Power Plants and other Nuclear Installations) as the basis of their Quality Assurance systems, not the ISO9001: 2000 standard (Quality Management systems – Requirement). The IAEA Code contains additional requirements to address nuclear safety issues that are not covered within the ISO standard.

### B.1. Implications

- **QA System certification** – Where appropriate, the licensee may require its suppliers to be qualified on the basis of certification to the ISO standard. The licensee has the ultimate responsibility to ensure that an acceptable degree of quality assurance in relation to nuclear safety has been achieved. Therefore, the licensees may impose additional IAEA Code Quality Assurance requirements regarding nuclear safety on its suppliers.

- **Audit, Assessments and Monitoring** – Depending on the nature of the contract there may be an increase in the amount of audit, assessment and monitoring carried out on Suppliers. These activities are normally carried out by the licensee but may, in some extreme cases, be carried out by the Regulators themselves.

## **C. Environmental protection**

The Environment Agency (EA) is responsible for enforcing specified laws and regulations in England and Wales to protect the environment.

The EA authorises radioactive discharges from nuclear sites to air, water (surface water and groundwater) and land. It also regulates nuclear sites under the Pollution Prevention and Control Regulations and issues consents for non radioactive discharges. The equivalent body in Scotland is the Scottish Environment Protection Agency (SEPA). The EA is responsible for regulating the discharges to the environment and disposal of radioactive waste on or from nuclear licensed sites, and the associated organisational management arrangements.

### **C.1. Implications**

The EA carries out a very diligent overview of licensee activities with regard to the impact of all site activities on the environment, perhaps more so than experienced in other industries. The requirements to address environmental issues and concerns can introduce lengthy time delays and can require specific controls to be implemented and environmental assessments to be carried out to ensure there is no detrimental impact resulting from the supplier's activities on the environment.

The activities that could have an environmental impact include:

- Chemicals and chemical products
- Use of chemicals
- Handling
- Environmentally hazardous chemicals
- Waste and recycling
- Hazardous waste
- Sorted waste
- Other waste
- Impact on the surrounding area
- Water and waste
- Land discharges
- Air emissions
- Noise
- Transportation

- Goods transportation
- The products
- Outflow of products and packaging
- The environmental impact of the products during use and end of life disposal

## D. Security

The Department of Trade and Industry's Office for Civil Nuclear Security (OCNS) regulates security arrangements for the protection of nuclear material and proliferation-sensitive technology within the civil nuclear industry. This is primarily in order to protect against the threats of terrorism and nuclear proliferation. The OCNS exercises statutory powers granted to the Secretary of State for Trade and Industry under the Atomic Energy Act 1954 and the Nuclear Installations Act 1965.

### D.1. Implications

- **Security clearance** – Access to a licensed site does require site security clearance if a contractor is to move unescorted between offices on the site. Security clearance can typically take up to 1 month to process, assuming that the individuals have no history of prosecution or recordable offences. Supporting references are required for applications for security clearance. Until security clearance is obtained, the contractor will be escorted at all times by a member of the licensee's staff or by another security-cleared contractor. Security clearance has to be obtained for every employee every three years. Once security clearance is obtained each contractor will be required to attend a training course and pass an assessment regarding site induction and safety on the particular site. The training and the associated assessment can take up to two hours per annum. Both security clearance and site induction must be completed for each different site.

## E. Other regulators

In addition to the nuclear regulators, there are other regulators who impact upon the industry. These include local authorities under their statutory planning and environmental health functions.